

CLAIMS

We claim:

1. A method of fulfilling an information need based on documents and an index stored on a computer-readable medium comprising the steps of:
- receiving a query containing an unspecified portion;
 - identifying one or more documents in the index that contain a match for at least a portion of the query; and
 - locating one or more matches for the query within the identified one or more documents.
2. A method according to claim 1, wherein the index identifies documents containing terms or groups of terms that satisfy restrictions.
3. The method of claim 1, wherein the documents are accessible over the Internet.
4. The method of claim 1, wherein the documents comprise World Wide Web pages.
5. The method of claim 1, further comprising the step of:
- accumulating information about a match as it is located.
6. The method of claim 1, further comprising the step of:
- assigning a score to a match.
7. The method of claim 1, wherein the locating step comprises locating a match within a plurality of documents, and wherein the score reflects the number of times an instance of the match is located among a plurality of documents.
8. The method of claim 1, further comprising the step of:
- outputting one or more of the matches, or a portion thereof, thereby providing a result for the query.

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- 1
- 2 9. The method of claim 8, further comprising the step of:
- 3 outputting identifiers or locations of one or more of the documents that contain a match
- 4 or portion thereof that was output in the outputting step.
- 5
- 6 10. The method of claim 9, wherein a location of a document comprises a uniform resource
- 7 locator.
- 8
- 9 11. The method of claim 9, further comprising the step of:
- 10 ranking the documents that contain a match, and wherein the second outputting step
- 11 comprises outputting the document identifiers or locations of the documents that contain a match
- 12 in an order based on the ranking.
- 13
- 14 ~~12. The method of claim 11, wherein the ranking step comprises ranking a document based on~~
- 15 ~~the number of times a match is located within the document.~~
- 16
- 17 13. The method of claim 1, further comprising the step of storing data identifying terms that
- 18 satisfy restrictions.
- 19
- 20 14. The method of claim 1, wherein the query comprises a partially unspecified term.
- 21
- 22 15. The method of claim 14, wherein the partially unspecified term includes a restriction that
- 23 comprises a morphological feature.
- 24
- 25 16. The method of claim 14, wherein the partially unspecified term includes a restriction that
- 26 comprises a syntactic feature.
- 27
- 28 17. The method of claim 14, wherein the partially unspecified term includes a restriction that
- 29 comprises a computer program.
- 30
- 31 18. The method of claim 14, wherein the locating step comprises:

1 locating a potential match for the query within a document, wherein the potential match
2 matches the specified portion of the query and wherein the potential match includes a portion
3 that corresponds to the unspecified term; and

4 determining whether the portion of the potential match that corresponds to the
5 unspecified term satisfies a restriction included in the partially unspecified term.
6

7 19. The method of claim 1, wherein the index comprises locations of terms within documents.
8

9 20. The method of claim 19, wherein the locating step comprises:

10 determining the location of a term in the query within a document using the index; and
11 locating a match for the query based on the location of the term within the document.
12

13 21. The method of claim 1, further comprising the step of:

14 storing a match or a portion thereof.
15

16 22. The method of claim 21, further comprising the step of:

17 storing a score for the match or portion thereof.
18

19 23. The method of claim 1, further comprising the step of:

20 storing a plurality of matches or portions thereof.
21

22 24. The method of claim 1, further comprising the step of:

23 storing a score for a plurality of matches or portions thereof.
24

25 25. The method of claim 1, further comprising the step of:

26 ranking a plurality of the located matches or portions thereof.
27

28 26. The method of claim 25, wherein the ranking step comprises:

29 ranking a located match or a portion thereof based on the content of a plurality of
30 documents identified in the identifying step.
31

26. The method of claim 25, wherein the ranking step comprises:

ranking a located match or a portion thereof based on the content of a majority of documents identified in the identifying step.

27. The method of claim 25, wherein the ranking is based on one or more features selected from the list consisting of: the location of a match within a document, a weight assigned to a document that contains a match, the age of a document that contains a match, the source of a document that contains a match, and a format feature of a match within a document.

28. The method of claim 25, wherein the ranking step comprises:

ranking a located match or a portion thereof based on the number of times an instance of the match is located within a plurality of documents identified in the identifying step.

29. The method of claim 25, wherein the ranking step comprises:

ranking a located match or a portion thereof based on the number of times an instance of the match is located within a majority of documents identified in the identifying step.

30. The method of claim 25, 27, or 28 further comprising the step of:

outputting one or more of the located matches, or one or more portions thereof, in an order based on the ranking, thereby providing a result for the query.

31. The method of claim 30, further comprising the step of:

outputting an indication of the ranking of a located match or portion thereof.

32. The method of claim 30 further comprising the step of:

outputting identifiers or locations of one or more of the documents that contain a match or a portion thereof that was output in the outputting step.

33. The method of claim 32 wherein a location of a document comprises a uniform resource locator.

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2 ~~34~~ 34. The method of claim 33, further comprising the step of:

3 ranking a plurality of documents, and wherein the second outputting step comprises

4 outputting identifiers or locations of the documents in an order based on the ranking.

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6 ~~35~~ 35. A method of fulfilling an information need based on documents and an index stored on a

7 computer-readable medium comprising the steps of:

8 receiving a query containing an unspecified portion;

9 identifying one or more documents in the index that contain a match for at least a portion
10 of the query; and

11 locating a plurality of matches for the query within the identified one or more documents.

12

13 ~~36~~ 36. A method of fulfilling an information need based on documents and an index stored on a

14 computer-readable medium comprising the steps of:

15 storing an index identifying documents containing terms;

16 receiving a query containing an unspecified portion;

17 identifying one or more documents in the index that contain a match for at least a portion
18 of the query; and

19 locating one or more matches for the query within the identified one or more documents.

20

21 ~~37~~ 37. A method of fulfilling an information need comprising the steps of:

22 receiving a query containing an unspecified portion, the unspecified portion including an
23 unspecified term; and

24 identifying a match for the query within a body of information stored on a computer-
25 readable medium.

26

27 ~~38~~ 38. The method of claim 37, wherein the body of information is accessible over the Internet.

28

29 ~~39~~ 39. The method of claim 37, wherein the body of information comprises World Wide Web

30 pages.

31

1 ~~40~~. The method of claim 37, wherein the query comprises a partially unspecified term.

2

3 ~~41~~. The method of claim 37, further comprising the step of:

4 ~~42~~ outputting the match or a portion thereof.

5

6 ~~42~~. A method of fulfilling an information need comprising the steps of:

7 ~~43~~ receiving a query containing an unspecified portion, the unspecified portion including an
8 unspecified term; and

9 identifying a plurality of matches for the query within a body of information stored on a
10 computer-readable medium.

11

12 ~~43~~. The method of claim 42, wherein the body of information is accessible over the Internet.

13

14 ~~44~~. The method of claim 42, wherein the body of information comprises World Wide Web
15 pages.

16

17 ~~45~~. The method of claim 42, further comprising the step of:

18 outputting one or more of the matches or portions thereof.

19

20 ~~46~~. The method of claim 42, further comprising the steps of:

21 ranking a plurality of the matches or portions thereof; and

22 outputting one or more of the matches or portions thereof in an order based on the
23 ranking.

24

25 ~~47~~. The method of claim 46, wherein the ranking is based on the number of times an instance of
26 a match or a portion thereof is identified.

27

28 ~~48~~. The method of claim 42, further comprising the step of:

29 assigning a score to a match.

30

31 ~~49~~. The method of claim 42, further comprising the step of:

1 storing a match.

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3 ⁵¹ 50. A method of fulfilling an information need comprising the steps of:

4 receiving a query containing an unspecified portion, the unspecified portion including a
5 designated unspecified term; and

6 identifying a plurality of matches for the query within a body of information stored on a
7 computer-readable medium.

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9 ⁷ 51. The method of claim 50, wherein the body of information is accessible over the Internet.

10

11 ³ 52. The method of claim 50, wherein the body of information comprises World Wide Web
12 pages.

13

14 ⁴ 53. The method of claim 50, further comprising the step of:

15 outputting one or more of the portions of the identified matches that correspond to the
16 designated unspecified term.

17

18 ⁵ 54. The method of claim 50, further comprising the step of:

19 ranking, for a plurality of the identified matches, the portion of each match that
20 corresponds to the designated unspecified term.

21

22 ⁴⁰ 55. The method of claim 54, wherein the ranking is based on the number of times an instance of
23 a match including the portion that corresponds to the designated unspecified term is identified.

24

25 ¹ 56. The method of claim 54, further comprising the step of:

26 outputting one or more of the portions that correspond to the designated unspecified term
27 in an order based on the ranking.

28

29 ⁴ 57. The method of claim 54, further comprising the step of:

30 outputting one or more of the matches in an order based on the ranking.

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1 58. A method of fulfilling an information need based on documents and an index stored on a
2 computer-readable medium comprising the steps of:

3
4 storing contexts for terms, wherein a context occurs in a document;
5 storing information identifying a document in which a context occurs;
6 receiving a query containing an unspecified portion; and
7 identifying one or more matches for the query within the contexts.

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9 59. The method of claim 58, wherein the index identifies documents containing terms that satisfy
10 restrictions.

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12 60. The method of claim 58, further comprising the step of storing data identifying terms that
13 satisfy restrictions.

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15 61. The method of claim 58, wherein the query comprises a partially unspecified term.

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19 62. The method of claim 61, wherein the partially unspecified term includes a restriction that
20 comprises a morphological feature.

21
22 63. The method of claim 62, wherein the partially unspecified term includes a restriction that
23 comprises a syntactic feature.

24
25 64. The method of claim 62, wherein the partially unspecified term includes a restriction that
26 comprises a computer program.

27
28 65. The method of claim 58, further comprising the step of:

29 locating, among the stored contexts, contexts that contain a match for at least one term in
30 the query; and wherein the identifying step comprises identifying matches for the query within
31 the located contexts.

1
2 66. The method of claim 58, wherein the storing step comprises:

3 67 storing, for a plurality of contexts, a finite state automaton that represents the context.
4

5 67. The method of claim 58, further comprising the step of:

6 outputting one or more of the identified matches, or portions thereof, thereby providing a
7 result for the query.
8

9 68. The method of claim 67, further comprising the step of:

10 outputting identifiers or locations of one or more of the documents that contain the
11 matches or portions thereof that were output in the outputting step.
12

13 69. The method of claim 68, wherein a location of a document comprises a uniform resource
14 locator.
15

16 70. The method of claim 68, further comprising the step of:

17 ranking a plurality of documents, and wherein the second outputting step comprises
18 outputting identifiers or locations of the documents in an order based on the ranking.
19

20 71. The method of claim 58, wherein the identifying step comprises:

21 locating a potential match for the query within a context, wherein the potential match
22 matches the specified portion of the query and wherein the potential match includes a portion
23 that corresponds to the unspecified term; and

24 determining whether the portion of the potential match that corresponds to the
25 unspecified term satisfies a restriction included in the partially unspecified term.
26

27 72. The method of claim 58, further comprising the step of:

28 assigning a score to a match or a portion thereof.
29

30 73. The method of claim 58, further comprising the step of:

31 storing a match or a portion thereof.

1
2 74. The method of claim 58, wherein the identifying step comprises identifying a plurality of
3 matches, further comprising the step of:

4 ranking a plurality of the identified matches or portions thereof.
5

6 75. The method of claim 74, wherein the ranking is based on one or more features selected from
7 the list consisting of: the location of a match within a document, a weight assigned to a document
8 that contains a match, the age of a document that contains a match, the source of a document that
9 contains a match, and a format feature of a match within a document.
10

11 76. The method of claim 74, wherein the ranking step comprises:

12 ranking an identified match or portion thereof based on the number of times an instance
13 of the match is identified within a plurality of contexts.
14

15 77. The method of claim 74, wherein the ranking step comprises:

16 ranking a plurality of the identified matches or portions thereof based on information
17 associated with a plurality of contexts that contain a match for the query.
18

19 78. The method of claim 74, 76, or 77, further comprising the step of:

20 outputting one or more of the identified matches or portions thereof in an order based on
21 the ranking, thereby providing a result for the query.
22

23 79. The method of claim 78, further comprising the step of:

24 outputting identifiers or locations of one or more of the documents that contain the
25 matches or portions thereof that were output in the outputting step.
26

27 80. The method of claim 79, wherein the location of a document comprises a uniform resource
28 locator.
29

30 81. A method of fulfilling an information need based on documents stored on a computer-
31 readable medium comprising the steps of:

1
2 storing an index identifying documents containing terms;
3 storing contexts for terms, wherein a context occurs in a document;
4 storing information identifying a document in which a context occurs;
5 receiving a query containing an unspecified portion; and
6 identifying one or more matches for the query within the contexts.
7

8 82. A method of fulfilling an information need based on documents stored on a computer-
9 readable medium comprising the steps of:
10

11 storing an index identifying documents containing terms;
12 storing contexts for terms, wherein a context occurs in a document;
13 storing information identifying a document in which a context occurs;
14 receiving a query containing an unspecified portion; and
15 identifying a plurality of matches for the query within the contexts.
16

17 83. A method of fulfilling an information need based on documents and an index stored on a
18 computer-readable medium comprising the steps of:
19

20 storing contexts for terms, wherein the context occurs in a document;
21 storing information identifying a document in which a context occurs;
22 receiving a query containing an unspecified portion; and
23 identifying a plurality of matches for the query within the contexts.
24

25 84. A method of fulfilling an information need comprising the steps of:
26

27 storing contexts in which terms occur;
28 receiving a query containing an unspecified portion;
29 identifying one or more matches for the query within the contexts.
30

1 85. The method of claim 84, wherein the storing step comprises storing an index identifying
2 contexts containing terms.

3
4 86. The method of claim 85, wherein the index identifies contexts containing terms or groups of
5 terms that satisfy restrictions.

6
7 87. The method of claim 84, wherein the contexts are obtained from documents accessible over
8 the Internet.

9
10 88. The method of claim 84, wherein the contexts are obtained from World Wide Web pages.

11
12 89. The method of claim 84, further comprising the step of storing data identifying terms that
13 satisfy restrictions.

14
15
16 90. The method of claim 84, wherein the query comprises a partially unspecified term.

17
18 91. The method of claim 90, wherein the partially unspecified term includes a restriction that
19 comprises a morphological feature.

20
21 92. The method of claim 90, wherein the partially unspecified term includes a restriction that
22 comprises a syntactic feature.

23
24 93. The method of claim 90, wherein the partially unspecified term includes a restriction that
25 comprises a computer program.

26
27 94. The method of claim 84, wherein the storing step comprises:
28 storing, for each of a plurality of contexts, a finite state automaton that represents the
29 context.

30
31 95. The method of claim 84, further comprising the step of:

1 outputting one or more of the identified matches or portions thereof, thereby providing a
2 result for the query.

3
4 96. The method of claim 84, further comprising the step of:
5 assigning a score to a match or a portion thereof.

6
7 97. The method of claim 84, further comprising the step of:
8 storing a match.

9
10 98. The method of claim 84, further comprising the step of:
11 ranking a plurality of the identified matches or portions thereof.

12
13 99. The method of claim 98, wherein the ranking step comprises:
14 ranking an identified match or portion thereof based on the number of times an instance
15 of the match is identified within a plurality of contexts.

16
17 100. The method of claim 98, wherein the ranking step comprises:
18 ranking a plurality of the identified matches or portions thereof based on information
19 associated with a plurality of contexts identified in the identifying step that contain a match for
20 the query.

21
22 101. The method of claim 98, 99, or 100, further comprising the step of:
23 outputting one or more of the identified matches or portions thereof in an order based on
24 the ranking, thereby providing a result for the query.

25
26 102. A method of fulfilling an information need comprising the steps of:

27
28 storing contexts in which terms occur;
29 receiving a query containing an unspecified portion;
30 identifying one or more matches for the query within the contexts.

1 103. A method of fulfilling an information need comprising the steps of:

2 storing contexts in which terms occur;
3 receiving a query, wherein the query comprises a term; and
4 locating, within the stored contexts, information related to the term, thereby identifying
5 information to fulfill the need.

6
7 104. The method of claim 103, further comprising the step of:

8 outputting information related to the term.
9

10 105. The method of claim 103, further comprising the step of:

11 identifying, within a collection of documents, contexts in which terms occur, and wherein
12 the storing step comprises storing a plurality of contexts identified in the identifying step.

13
14 106. The method of claim 105, wherein the collection of documents comprises World Wide
15 Web pages.

16
17 107. The method of claim 103, wherein the locating step comprises:

18 locating a context that includes the term.
19

20 108. The method of claim 103, wherein the located information comprises a context that includes
21 the term.

22
23 109. The method of claim 108, further comprising the step of:

24 outputting the context or a portion thereof.
25

26 110. The method of claim 103, wherein the query comprises a plurality of terms and wherein the
27 locating step comprises:

28 locating a context that includes each of the plurality of terms.
29

30 111. The method of claim 103, wherein the query comprises a phrase and wherein the locating
31 step comprises:

1 locating a context that includes the phrase.

2
3 112. The method of claim 111, further comprising the step of:

4 outputting the context or a portion thereof.

5
6 113. The method of claim 103, wherein a context for a term comprises the term itself and a
7 predetermined number of terms on either side of the term.

8
9 114. The method of claim 103, wherein the query comprises a partially unspecified term.

10
11 115. The method of claim 103, wherein a context for a term is stored as a finite state automaton.

12
13 116. The method of claim 103, wherein a context for a term comprises a left context for the term
14 and a right context for the term.

15
16 117. The method of claim 103, wherein the locating step comprises locating a plurality of
17 contexts, each of which includes the term.

18
19 118. The method of claim 117, further comprising the step of:

20 ranking the contexts, or portions thereof.

21
22 119. The method of claim 117, further comprising the step of:

23 outputting a plurality of the contexts, or portions thereof, in accordance with the ranking.

24
25 120. The method of any of claims 104, 109, or 112, further comprising the step of:

26 outputting an identifier or a location of a document that contains a context that is output.

27
28 121. A method of fulfilling an information need based on a body of information stored on a
29 computer-readable medium comprising the steps of:

30 identifying a plurality of matches for a partially unspecified query; and

31 ranking a plurality of the matches or portions thereof.

1
2 122. The method of claim 121, wherein the body of information comprises World Wide Web
3 pages.

4
5 123. The method of claim 121, further comprising the step of:
6 outputting one or more of the matches or portions thereof in an order based on the
7 ranking, thereby providing a result for the query.

8
9 124. A method of fulfilling an information need based on a body of information stored on a
10 computer-readable medium comprising the steps of:
11 identifying a plurality of results for a query, the results occurring within documents; and
12 ranking the plurality of results based on the content of a plurality of documents in which
13 a result is identified.

14
15 125. The method of claim 124, wherein the ranking step comprises ranking the plurality of
16 results based on the number of times each of the plurality of results is identified among a
17 plurality of documents.

18
19 126. The method of claim 124, wherein the identifying step comprises identifying a plurality of
20 results by searching information that appears in Web pages.

21
22 127. The method of claim 124, further comprising the step of:
23 outputting the results in an order based on the ranking.

24
25 128. The method of claim 127, further comprising the step of:
26 for each result, ranking the documents in which the result is identified.

27
28 129. The method of claim 127, further comprising the step of:
29 outputting identifiers or locations for the documents in an order based on the ranking.
30

1 130. The method of claim 129, wherein the outputting step comprises outputting the identifiers
2 or locations in proximity to the result that corresponds to the documents.

3
4 131. An apparatus for fulfilling an information need based on documents and an index stored on
5 a computer-readable medium comprising:

6 memory means that stores computer-executable process steps; and
7 a processor that executes the process steps so as (i) to receive a query containing an
8 unspecified portion, (ii) to identify one or more documents in the index that contain a match for
9 at least a portion of the query, and (iii) to locate one or more matches for the query within the
10 identified one or more documents.

11
12 132. An apparatus for fulfilling an information need comprising:

13 memory means that stores computer-executable process steps; and
14 a processor that executes the process steps so as to (i) receive a query containing an
15 unspecified portion, the unspecified portion including an unspecified term, and (ii) identify a
16 match for the query within a body of information stored on a computer-readable medium.

17
18 133. An apparatus for fulfilling an information need comprising:

19 memory means that stores computer-executable process steps; and
20 a processor that executes the process steps so as to (i) receive a query containing an
21 unspecified portion, the unspecified portion including an unspecified term, and (ii) identify a
22 plurality of matches for the query within a body of information stored on a computer-readable
23 medium.

24
25 134. An apparatus for fulfilling an information need comprising:

26 memory means that stores computer-executable process steps; and
27 a processor that executes the process steps so as to (i) store contexts for terms, wherein a
28 context occurs in a document, (ii) store information identifying a document in which a context
29 occurs, (iii) receive a query containing an unspecified portion, and (iv) identify one or more
30 matches for the query within the contexts.

1 135. An apparatus for fulfilling an information need comprising:

2 memory means that stores computer-executable process steps; and

3 a processor that executes the process steps so as to (i) store contexts in which terms
4 appear, (ii) receive a query containing an unspecified portion, and (iii) identify one or more
5 matches for the query within the contexts.

6 136. An apparatus for fulfilling an information need comprising:

7 memory means that stores computer-executable process steps; and

8 a processor that executes the process steps so as to (i) store contexts in which terms occur,
9 (ii) receive a query, wherein the query comprises a term, and (iii) locate, within the stored
10 contexts, information related to the term, thereby identifying information to fulfill the need.

11
12 137. An apparatus for fulfilling an information need comprising:

13 memory means that stores computer-executable process steps; and

14 a processor that executes the process steps so as to (i) identify a plurality of matches for a
15 partially unspecified query, and (ii) rank a plurality of the matches or portions thereof.

16
17 138. An apparatus for fulfilling an information need comprising:

18 memory means that stores computer-executable process steps; and

19 a processor that executes the process steps so as to (i) identify a plurality of results for a
20 query, the results occurring within documents, and (ii) rank the plurality of results based on the
21 content of a plurality of documents in which a result is identified.

22
23 139. Computer-executable process steps stored on a computer-readable medium, the computer-
24 executable process steps to fulfill an information need based on documents and an index also
25 stored on a computer-readable medium, the computer-executable process steps comprising:

26 code to receive a query containing an unspecified portion;

27 code to identify one or more documents in the index that contain a match for at least a
28 portion of the query; and

29 code to locate one or more matches for the query within the identified one or more
30 documents.

1 140. Computer-executable process steps stored on a computer-readable medium, the computer-
2 executable process steps to fulfill an information need, the computer-executable process steps
3 comprising:

4 code to receive a query containing an unspecified portion, the unspecified portion
5 including an unspecified term; and
6 code to identify a match for the query within a body of information stored on a computer-
7 readable medium.

8
9 141. Computer-executable process steps stored on a computer-readable medium, the computer-
10 executable process steps to fulfill an information need, the computer-executable process steps
11 comprising:

12 code to receive a query containing an unspecified portion, the unspecified portion
13 including an unspecified term; and
14 code to identify a plurality of matches for the query within a body of information stored
15 on a computer-readable medium.

16
17 142. Computer-executable process steps stored on a computer-readable medium, the computer-
18 executable process steps to fulfill an information need, the computer-executable process steps
19 comprising:

20 code to store contexts for terms, wherein a context occurs in a document,
21 code to store information identifying a document in which a context occurs,
22 code to receive a query containing an unspecified portion; and
23 code to identify one or more matches for the query within the contexts.

24
25 143. Computer-executable process steps stored on a computer-readable medium, the computer-
26 executable process steps to fulfill an information need, the computer-executable process steps
27 comprising:

28 code to store contexts in which terms appear,
29 code to receive a query containing an unspecified portion; and
30 code to identify one or more matches for the query within the contexts.
31

1 144. Computer-executable process steps stored on a computer-readable medium, the computer-
2 executable process steps to fulfill an information need, the computer-executable process steps
3 comprising:

4 code to store contexts in which terms occur;
5 code to receive a query, wherein the query comprises a term; and
6 code to locate, within the stored contexts, information related to the term, thereby
7 identifying information to fulfill the need.

8
9 145. Computer-executable process steps stored on a computer-readable medium, the computer-
10 executable process steps to fulfill an information need, the computer-executable process steps
11 comprising:

12 code to identify a plurality of matches for a partially unspecified query; and
13 code to rank a plurality of the matches or portions thereof.

14
15 146. Computer-executable process steps stored on a computer-readable medium, the computer-
16 executable process steps to fulfill an information need, the computer-executable process steps
17 comprising:

18 code to identify a plurality of results for a query, the results occurring within documents;
19 and
20 code to rank the plurality of results based on the content of a plurality of documents in
21 which a result is identified.

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